Original Article

Change in dental caries status over 2 years in children of Panchkula, Haryana: A longitudinal study

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Abstract

Background: Despite credible scientific advances and the fact that it is preventable, dental caries continues to be a major public health problem in developing countries like India. The first step toward disease prevention at community level is assessment of the disease activity. **Aim:** Hence this study was conducted to evaluate the change in dental caries status over 2 years in children of Panchkula, Haryana. **Materials and Methods:** 207 school children having mixed dentition (age 7-8 years) and 103 children (age 12-13 years) were assessed for change in their dmf/DMF status over 2 years. **Results and Conclusion:** Results revealed that 81% of 7-8-year-old children and 83 % 12-13-year-olds had caries. There was a statistically significant increase in DMFT score of children over 2 years; thus necessitating implementation of rigorous preventive strategies at community level.

Key words: *Dental caries, prevention*

INTRODUCTION

Dental caries is an infectious disease of microbial origin that begins as soon as the first tooth erupts into the oral cavity. Closely related to individual life style; social, environmental and behavioral factors contribute to the etiology of the disease. *Streptococcus mutans* - the main microbe implicated in the disease process is known to colonize the oral cavity as early as 3 months of age.[1] The oral microbial load increases as permanent teeth erupt. Besides irregularities on dental surfaces, broken/decayed tooth structure provides an additional surface area and a more protected environment for this bacterium to grow and flourish.

Even a small amount of caries must be carefully considered because of the indication of transmission of bacteria to other teeth as the net oral microbial load increases. This implies especially to the children in the mixed dentition when recently erupted permanent teeth exist together with simultaneously exfoliating carious primary teeth. Caries has to be dealt with early, as it leads to emergency room visits, increased costs and time and diminished quality of life.

In most western industrialized countries, the prevalence of caries in children has decreased significantly during the past 20 years.[2] However, the disease continues to be a major public health problem in developing countries like India. Studies reveal that developing countries continue to show a trend of increase in dental caries due to change in standard of living, dietary habits and sugar consumption.[3]

The first step toward disease prevention at community level is assessment of the disease activity. Most of the studies conducted are cross-sectional or semi-longitudinal in nature that depicts the point prevalence of caries. Dental caries experience of 9, 10, 11, 12-year-old school children from Rohtak (Haryana) was 2.82, 2.87, 3.40, 3.15, respectively [4] as opposed to the WHO goal of DMFT < 3 at 12 years of age. Longitudinal studies on the other hand show the actual status of

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disease activity. Besides they help to assess the long-term effects of oral health behaviors in children.

Hence this study was conducted on school children of Panchkula (Haryana) having mixed dentition (age 7-8 years) and 12-13-year-old children to assess the change in dmf/DMF status after 2 years.

MATERIALS AND METHODS

Two schools near the institution from where consent could be obtained were considered for oral health examination. Two hundred and seven children aged 7-8 years and 103 children aged 12-13 years were examined for their DMFT/deft status. Dental examination was done under daylight using a plain mouth mirror and probe. Caries was recorded according to the modified WHO criteria.[5]

After examination children were educated about the desired oral health behavior via hand outs and lectures. Lectures mainly emphasized on the technique of brushing, frequency and timing of brushing and non-cariogenic diet. Those in need of treatment were referred to the institution.

There after the same group of children was examined again by the same investigator after 2 years and their deft/DMFT status was recorded. One hundred and nine children at the age of 9-10 years and 92 children from 14 to 15 years could be followed up.

Data so collected was tabulated and statistically analyzed.

RESULTS

Results revealed that 81% of 7-8-year-old children and 83 % 12-13-year-olds had caries during the initial examination. The mean deft of 7-8 year olds was 0.95 and at 9-10 years was 1.18. Using paired *t* test, *P*-value of 0.079 indicates that the increase in deft was not statistically significant.

The mean DMFT at 7-8 years age was 0.297 and at 9-10 years was 1.03. *P*-value of 0.0000006 shows that the increase was statistically significant after 2 years.

For 12-13-year-old children the mean DMFT was 0.51. After 2-year follow-up the mean DMFT was 0.83. The increase was statistically significant ($P=0.0006$). The DMFT score increased significantly over a span of 2 years. The mean DMFT was 0.51 which increased to 0.83 in a span of 2 years [Figure 1].

Table 1: Change in dmft and DMFT over 2 years

Age (years)	Dmft	*P*-value	DMFT	*P*-value
7-8	0.95	0.079	0.297	0.000
9-10	1.18		1.03	
12-13			0.51	0.0006
14-15			0.83	

DISCUSSION

In most western industrialized countries, the prevalence of caries in children has decreased significantly during the past 20 years. Recent epidemiological data reveals that severity of dental caries has decreased from a very high DMFT of more than 6 in 1960 to a low DMFT of 1.2-2 in 1990.[6] Despite credible scientific advances and the fact that caries is preventable, the disease continues to be a major public health problem in developing countries like India. Studies show that overall prevalence and severity of dental caries is increasing dramatically.[7]

Results of our study revealed the mean deft score of 0.95 and DMFT score of 0.297 in 7-8-year-old children. According to Leena MM *et al* any caries at 3, 5, 7 and 10 years of age was a predictor of poor dental health at 15 years of age.[8] At 7-8 years children have both primary and permanent teeth in the oral cavity. The risk of bacterial transmission to newly erupted permanent teeth increases dramatically if the primary teeth are carious. This clearly points to the need of preventative strategies as soon as secondary dentition erupts into the oral cavity.

The 12-year-age group has been considered as the global monitoring age group for caries. Thus the results of present study indicate higher prevalence and rapid increment in dental caries. This highlights the need for

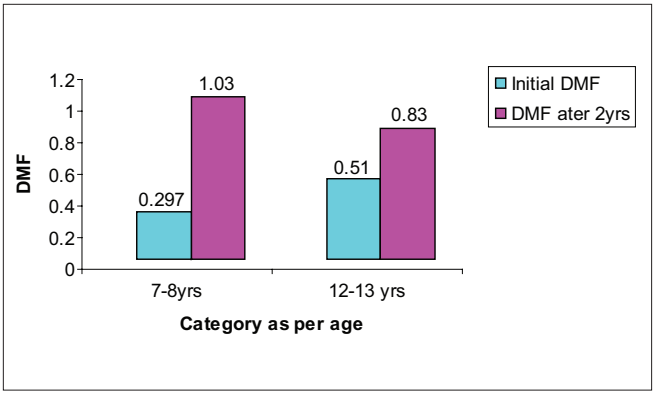

Figure 1: Graphic representation of change in dmft and DMFT over 2 years

a dental health program to target the specific segment of population through systematic school oral health promotion programs.

Preventive approaches have been suggested to be a viable alternative. In our study despite parent and teacher education about desirable oral health behaviors and making children aware regarding their oral hygiene and dietary habits the increment in dental caries could not be curbed. This may be attributed to lack of reinforcement and motivation over the 2-year span.

According to Marthaler *et al*, in countries in which DMFT averages are not below 2.0, most of the caries occurs in the pits and fissures of the first molars until the age of 12 years.[9] Consequently there are reasons to assume that sealants can be very important, or even the main factor in lowering DMFT. In Sweden, the number of children with caries had declined from 85% in 1967 to 42% in 1987, after which the decline leveled out. In 2002, 46% of the children had caries with mean dmfs of 2.0±3.6. This is attributed to the fact that dental care for children is free of charge between the ages of 3 and 19 and it has been based on a preventive strategy for more than 30 years.[10]

Thus placement of sealants and school water fluoridation programs should be considered to tackle the overwhelming problem of dental caries in our country. Oral health screening during schooling should be made mandatory. Effective strategies should be developed to provide affordable basic health services to the masses.

It is essential that basic oral health care routines are introduced and reinforced during eruption of deciduous dentition. These behavioral changes are easier to implement at an earlier age and chances of it benefiting the public at large are greater than when attempted at a later stage. A small change becomes renaissance when it starts from a person and eventually spreads to masses.

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